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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/582,843	07/05/2000	MYOUNG-JIN KIM	P56138PCT	2664

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WASHINGTON, DC 20005-1202

EXAMINER

AHMED, SAMIR ANWAR

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 06/18/2003

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/582843

Applicant

MYOUNG-JIN Kim et al.

Examiner

S. Ahmed

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7 is/are rejected.
- 7) ☒ Claim(s) 5-6 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3 6) ☐ Other: _____

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Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: inspection object 12, on page 2, line 3 and reference model 11, on page 2, line 7. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Longest, Jr. et al. (U.S. Patent 5,305,392).

As to claim 1, Longest discloses a method for inspecting inferiority in shape of an object through an inspection image obtained from an inspection object, the object shape inferiority inspection [printed web flows (see Figs 4A and Fig 5)] method comprising the steps of:

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preparing at least one reference image for judgement of shape inferiority in the inspection object considering an allowable error for shape [in a learning phase, the secondary processing means creates a template representation of the gray values for each pixel (reference image) and determines the minimum and maximum threshold values to create a jitter desensitized template (col. 2, lines 63-86, col. 5, lines 11-59);

obtaining the inspection image from the inspection object (col. 4, lines 1-9);

comparing gray scales for each one part, at least, of portions where the reference image and the inspection image mutually correspond (col. 4, lines 61-64, col. 5, lines 55-56, col. 7, lines 27-29) ; and

judging whether inferiority in shape of the inspection object exists, based on the result of the gray scale comparison (col. 5, lines 57-59, col. 7, lines 29-33).

As to claim 2, Longest further discloses, wherein said gray scale comparison step comprises comparison of brightness values of each corresponding pixel of the inspection image and the reference image [the inspection image and the reference image are converted by A/D converter to an 8-bit gray scale value, each gray scale value represents one of 255 possible gray values between black at 0 and white at 255 (col. 6, lines 55-62), i.e., the comparison of gray values is indeed a comparison of brightness values of the pixels].

As to claim 3, Longest further discloses, wherein said reference image preparation step comprises the sub-steps of:

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obtaining a range of brightness for the pixel corresponding to a range of allowable error for a position value on a boundary line, on the basis of a function relation with a change in brightness of the pixel according to a change in a position value on the boundary line of the inspection object [for each input image, a set of training images (reference images) are created. For an image, a preselected edge value (boundary line) is searched for a predicted address (position). The difference between the address (position) at which the edge value is actually located and where it was predicted to have been provides an offset (change in a position value on the boundary line). The offsets are used for subsequent pixel address (pixel position) generation each pixel has a gray scale value (brightness value). The minimum value, maximum value (range of gray scale values or brightness values), and mean standard deviation (function relation with a change in brightness of the pixel according to a change in a position value on the boundary line) of each pixel address (position) (col. 5, lines 11-30, col. 6, lines 55-62); and

establishing and registering a minimum image whose brightness value is a minimum value of the brightness range and a maximum image whose brightness value is a maximum value of the brightness range, as the reference image [jitter desensitized template is created from the pixel values, setting high and low limits for each pixel (col. 5, lines 44-55)].

As to claim 7, Longest further discloses, wherein said inspection image and said reference image are expressed in terms of gray scale (col. 6, lines 55-62).

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Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Longest, Jr. et al. (U.S. Patent 5,305,392) as applied to claim 3 above, and further in view of Shishido et al. (U.S. Patent 6,087,673).

As to claim 4, Longest does not disclose, wherein said function relation considers existence of pixel noise.

Shishido discloses a method and apparatus for defect inspection that determines an allowable range of maximum and minimum for a gradation value (value of light and shade)(brightness and gray level values) with a position shift between an inspection image and a reference image to determine a configuration defect of an object (col. 2, line 55-col. 3, line 10, col. 6, lines 46-60). The method considers the pixel noises (col. 9, lines 15-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Shishido's teaching to modify Longest's method by considering the pixels noise in order to reduce the number of false information caused by a mismatch due to be inspected and an image detecting system.

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Allowable Subject Matter

6. Claims 5-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 5, the limitation, "wherein said function relation is accomplished from addition of or subtraction of the pixel noise" in combination with the other elements of the claim and the base claim is not disclosed or suggested by the prior art of record.

As to claim 6, the limitation, "wherein the gray scale comparison operation for said gray scale comparison step is expressed as the following equation:

$$C(Q; U, L) = \Pi [l(i,j) \leq q(i,j) \leq u(i,j)]$$

wherein $C(Q; U, L)$ is a function for discriminating shape inferiority in an object, using the reference images U and L , when the inspection image Q is given, $l(i, j)$ is a brightness value of a pixel positioned at a coordinate (i, j) of the minimum image L , $q(i, j)$ is a brightness value of a pixel positioned at a coordinate (i, j) of the inspection image Q , and $u(i, j)$ is a brightness value of a pixel positioned at a coordinate (i, j) of the maximum image U " in combination with the other elements of the claim and the base claim is not disclosed or suggested by the prior art of record.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samir Ahmed whose telephone number is (703) 305-9870. The examiner can normally be reached on M-F from 8:00 AM to 4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached on (703) 308-

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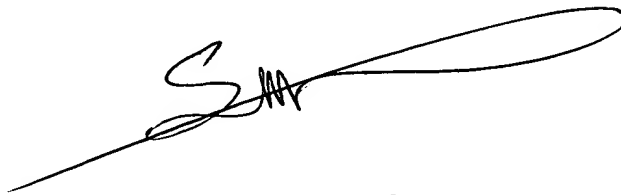
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6604. The fax phone number for this Group is (703) 872-9314. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 303-3900.

SA

6/13/03

A handwritten signature in black ink, appearing to be 'S. Ahmed', with a long horizontal flourish extending to the right.

**SAMIR AHMED
PRIMARY EXAMINER**